MENTORING MANAGEMENT DATABASE

by

Alexandra Cava

Samantha Kin

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Abstract

A new mentoring program is set to begin next year pairing children from Kindergarten through 12th grade with college students as their mentors. Keeping track of the mentor information, mentee information, pairings, stipend disbursements, interview question results, events, and final assessments by hand would be extremely difficult, therefore, a database would be a great asset to the program.

Creating a database in Microsoft Access allows a user to have all this information in one convenient location, therefore, ensuring there is a good user interface is a key component to this project. Using Perach's "Guide to the Perplexed" as the base information for the program, the database is modeled to include the necessary interview results and post-mentoring assessments outlined in the guide. Furthermore, the type of program includes mentor stipends and encourages other events to be held besides strictly one-on-one mentoring time which needs to be kept track of well. Designing these forms and tables requires the information to be easily recordable and accessible. After every milestone or significant revision, the database was reviewed with the client to ensure her satisfaction since she will likely be the sole or co-user.

Ultimately, the database was a success by being straightforward, user-friendly, and including all necessary capabilities. Naturally, there are concerns of the durability of the database over time and Access only being designed for one user, but this can be assessed over time and use of the database after a round of the mentoring program has been completed.

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I. Introduction

The Perach Tutorial Project is a mentoring program that originated in Israel in 1974, pairing underprivileged children in Kindergarten to 12th grade with university students as their mentors. The guidance that these children receive from their tutor ultimately helps them realize their potential and increase their intrinsic motivation. The subject of this report describes how Microsoft Access was used to design a database for management of U.S. mentoring programs similar in structure to Perach. The target mentoring programs are that of Kindergarten to 12th grade students that are mentored by college students in an effort to improve the children's current performance in school. In order to run the mentoring programs smoothly, administrators need a way to efficiently manage and keep an accurate track of all relevant information. The objectives of this project are to create a database that will allow the user to:

- Input and edit all mentor and mentee information
- Monitor stipends, survey results, events, interview responses, expenses, and mentoring progress

Conducive to developing a user-friendly database, all knowledge and skills regarding Microsoft Access gained in "IME 312: Data Management and System Design" was reviewed extensively. Additional research was also done on existing mentoring programs in order to develop a concrete understanding of all the elements needed in the final design of the database. The primary problem solving methodology used in this project was trial and error due to the nature of creating databases via Access. The database was constantly evaluated and modified to fit the guidelines and goals of mentoring programs such as Perach. The remainder of the report will thoroughly detail each milestone made in arriving to our final database design.

II. Background

Mentor management databases are used in a variety of mentoring programs. Large national organizations, such as Big Brothers Big Sisters, would not be able to operate without a database to keep track of their programs and the people in these programs. Software products like American Learns supports a variety of companies and organizations that have different needs anywhere from small community to nation-wide organizations such as AmeriCorps. Innovative Mentoring is another company that offers a customizable software package based on the need of the customer and boasts that their software products are based on proven tactics for the success of mentoring programs.

Perach's "Guide to the Perplexed" is the document that will be used to set up the mentoring program for the Atascadero Fine Arts Academy. According to the guide, the goal for the mentee is to establish a connection with the mentor in order to foster self-esteem, solidify academics and achievements, and inspire the children in regards to their future. Additional benefits for the community and general society includes more supported youth, more effective educations, and increased happiness. Furthermore, establishing good relationships with the school, principals, parents, and teachers as well as having interviews with key stakeholders including the children is key for a successful foundation.

Literature Review

The literature review regarding the creation of a mentoring management database has two significant parts. The first discusses the psychology behind youth mentoring and how it relates to the design of the database. The second part discusses the steps in making a database user-friendly and the importance of doing so.

Psychology of Youth Mentoring

Over the years, mentoring has increased in popularity due to the decreases in support via family. Mentoring is a less-intensive alternative to therapy and other more serious measures, and it provides a variety of benefits simultaneously that cannot be achieved effectively otherwise. As mentoring programs have grown in popularity, there has been an increasingly wide breadth of what mentorship includes. That being said, it is important to have a definition in order to measure and lie out expectations so long-term goals can be met (Situational Mentor xv-xvi).

Mentoring programs are often initiated or developed with the hopes of benefitting the mentee, however, mentoring has proved to be a mutual relationship benefitting both the mentor and the mentee as the two often gain valuable knowledge from one another. In today's age of mentoring, mentors and mentees are encouraged to establish a collaborative relationship with a constant focus on reflection. Topics to reflect on include progress made towards a goal, continuation of the learning process, and achievements made thus far. Along with an openness and willingness to learn, reflection allows both partners in the relationship to inherit new skills that they might not have acquired otherwise (Trepanier-Street, 2007).

In developing a mentoring program, the description of the program needs to be clearly articulated and it must express the issues it wishes to solve with the relationships formed. In addition, with a structured curriculum, any change in knowledge or skills can be seen as a measured, positive impact (DuBois & Karcher, 2005).

Mentoring children has its advantages over mentoring an adolescent or teenager. Since children are less likely to have already experienced any serious risks or trauma in their young lives, mentors have a greater chance of providing a greater preventive impact than with an adolescent. In addition, mentors can often help guide children through key transition stages in their lives, however, the child's lack of verbal and cognitive abilities could also inhibit them from fully benefiting from the experience and relationship (DuBois & Karcher, 2005). As for the

mentor, working with young children results in an increased knowledge and understanding of child development and proper developmental practices in education (Trepanier-Street, 2007).

Several studies have been conducted to investigate the best conditions for a successful mentoring relationship. A study done in 1997 by Stein showed that longer mentoring relationships established with adults as mentors had more positive outcomes due to the ongoing nature of the relationship. Another study done by Grossman and Rhodes in 2002 exhibited that mentoring lasting a year or more had more academic, psychosocial and behavioral outcomes while relationships ending too soon concluded in a lower perceived academic competence and lower valued self-worth for the mentee (DuBois & Karcher, 2005).

A recent mentoring program, Jumpstart, paired young children with college students. At both the start and the end of the program, the mentors were asked to complete a survey that questioned them on their knowledge of childhood development. The responses that were made at the end of the program showed a significant gain in knowledge and understanding in various areas in comparison to the responses given before the mentoring began. After working in the Jumpstart program, more than half of college mentors indicated that the experience had helped them academically and several expressed an interest in pursuing a career in education or their preexisting interest was reinforced. Overall, the program demonstrated that children had a positive impact on the college students in a personal and professional aspect. The mentors expressed the development of leadership, communication, and teamwork skills along with an understanding and respect for others as a result of the program (Trepanier-Street, 2007).

Surveys, like those given in the Jumpstart program, are extremely crucial in assessing the effectiveness of a mentoring program. A software catered to carrying out the functionalities of a mentoring program needs to be able to record any interview and survey information, along with a place to record direct observations as well. In order to measure a mentee's progress accurately, the database should allow for standardized ratings to be recorded by the user from

parents, teachers, peers, mentors, and mentees. Observational coding systems could also be another way of assessing a change in a child's affective responses (DuBois & Karcher, 2005).

The Perach Tutorial Project incorporates several of the principles that have been found to be most effective in child mentoring which is why the program has been known to be so successful. It was started by Dr. Rony Attar and Amos Carmelli in Israel in 1974 and has since spread to about 20 other countries worldwide and is the largest organization of its kind in the world (The Perach Tutorial Project). Underprivileged children are able to grow academically and socially through a compassionate relationship with their personal mentor; in contrast, the university students gain a desire to work towards reducing social gaps and receive an incentive for their time and dedication that can be put towards their college tuition (Rehovot, 2008).

Creating a User-Friendly Database

Databases are widely used throughout mentoring programs. Different companies need different levels of database functionality. MENTOR offers a database called MentorCore with 3 target audiences: Youth, Higher Education, and Workplace mentoring. The youth and higher education editions have four price points depending on the number of mentors and mentees in the system. The lowest level is $75/month for 100 matches. InnovativeMentoring simply has three tiers of their software packages based on size of the program and how many functions the customers want access to. The lowest level has a setup fee of $200, a monthly cost of $25, and includes some of the follow features: 1-5 users, unlimited matches, customization, mass email, training, and support. However, this option does not include surveys like the tier two option does. Assessing these costs and options helps narrow down features to include and what applications to consider.

Several programs currently exist that could be used in building a database, but it should be noted that spreadsheet programs, like Microsoft Excel, have a lot of room for potential error due to the fact that all data must be manually tabbed through using arrow keys. In addition, only

about 20 variables can be seen at a time on a spreadsheet program which could be another possible cause for error during scrolling or reorientation. Microsoft Access eliminates these potential causes for error by allowing automatic tabbing from one variable to the next and through its format design which allows all variables to be seen on the screen at the same time (Schneider, Schneider, & Laurenz, 2005). Therefore, Microsoft Access was the database management system application chosen due to the increased functionality compared to Excel and the simplicity. A standalone version of Microsoft Access, not a part of a suite package as it has typically been in the past, is valued at $109.99 according to the Microsoft website. However, the California Polytechnic State University, San Luis Obispo licenses the program, so there were no costs accrued in making the database.

In creating any database, it is extremely essential that a plan is set in place that outlines the desired functions and capabilities of the database before first diving straight into Microsoft Access. Making a plan will save time and will help easily outline the tables and forms needed and how each data field will need to relate. When drafting the plan, the future user of the database should always be kept in mind, along with the tasks they will need to perform. By doing so, the creator of the database will be able to determine just how user-friendly it needs to be (Black & Vernetti, 2015).

There are three major components in creating a database through Microsoft Access: tables, queries, and forms. All data in Access is stored in tables, which are formatted as spreadsheets. Often times, each table will possess a primary key, which identifies each record in the table by a unique value. This is important because repeating groups of data within a table can create null values (Black & Vernetti, 2015). By setting a primary key, it will be impossible for any duplicate data within that field to be entered into the table (Schneider, Schneider, & Laurenz, 2005). Lastly, there are two relationships between tables: one-to-one and one-to-many. A one-to-one relationship relates two separate tables by joining the same exact field in each one while a one-to-many relationship relates two separate tables by connecting the

primary field in one table to a field in another table that is not a primary key and therefore can have multiple values (Black & Vernetti, 2015).

A query in Microsoft Access pulls together specific records from one or more tables and consolidates all of them information onto a single datasheet. Queries are extremely useful because they allow the user to view only the fields he or she is interested in analyzing within a given table. In addition, append queries, a specific type of query, make data entry easier by facilitating edits made to specific data tables without ever having to open the table itself (Black & Vernetti, 2015).

Lastly, a form is used to create the user interface within Access and often has black spaces open for entering and modifying data (Schneider, Schneider, & Laurenz, 2005). A form is extremely essential because it allows the user to enter new information into previously created tables (Black & Vernetti, 2005). Luckily, Microsoft Access makes it fairly simple to make a form user-friendly by allowing automatic tabbing from field to field and record to record. In addition, the Form Wizard allows users to format the layout so that all data fields can be placed on the same screen and to change the background, color, or font of the form (Schneider, Schneider, & Laurenz, 2005).

III. Design

Requirements, Specifications, & Constraints

The purpose of the database is to keep track of and easily manage a variety of data. This includes personal information for both mentors and mentees, mentor tuberculosis test and fingerprinting dates, pairings, meeting dates and times, stipend amounts and disbursement information, event details, interview question responses, and end-of-program assessments. Creating a user-friendly way of organizing and interacting with this data will allow administrators to have a more successful mentoring program and run it more smoothly. Using the Perach's "Guide to the Perplexed" gives further insight as to the specific goals and methods of the program. Using this document further assists in outlining what to include in the database and especially the forms where data is input.

A major constraint for this project is the lack of a multi-user database. By using Access, only one user can input or utilize the data at a time, and sharing the file would require either a cloud drive or other method such as email or dropbox. This can be highly inconvenient if, for example, multiple coordinators of the program wanted to access and edit the data simultaneously in preparation for an event.

User-Interface Design

The user-interface is such an important aspect of the design because a poorly designed user-interface will only result in confusion and frustration for the user. Therefore, for the database to be fully functional, it must be user-friendly. The program coordinator plans on being able to carry out several operations through the database. These operations include inputting new mentors and mentees, pairing mentors and mentees, recording interview questions, and recording stipends, to name a few. For this reason, it was best to incorporate a main form that opens automatically each time the database is opened by the user. The main form has buttons

linking to each of the operations, which in turn all have their own separate form with a button linking back to the main form. This will make it extremely useful for the user to navigate from operation to operation. A screenshot of the main form can be seen in Figure 1.

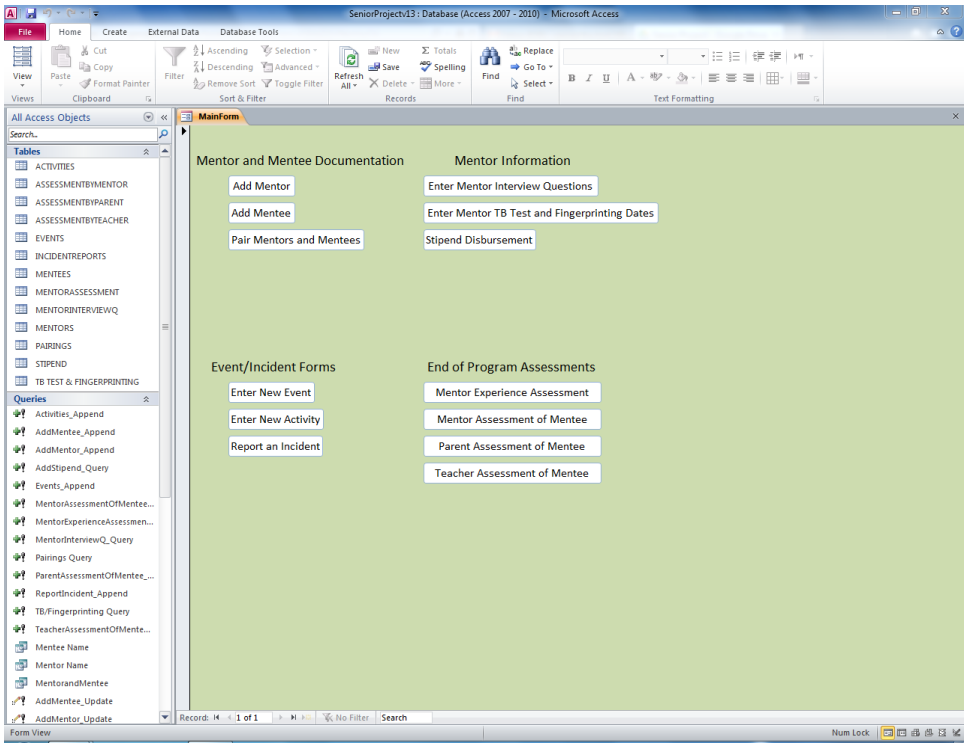

Figure 1: Main Form

The individual forms that were included were “Add New Mentee”, “Add New Mentor”, “Add Mentor TB & Fingerprinting”, “Pair Mentor & Mentee”, “Mentor Interview Questions”, “Record Stipends”, “Record Events”, “Record “Activities”, “Record Incident”, “Mentor Experience Assessment” and “Assessment of Mentee” for mentors, teachers, and parents (Figures xx - xx).

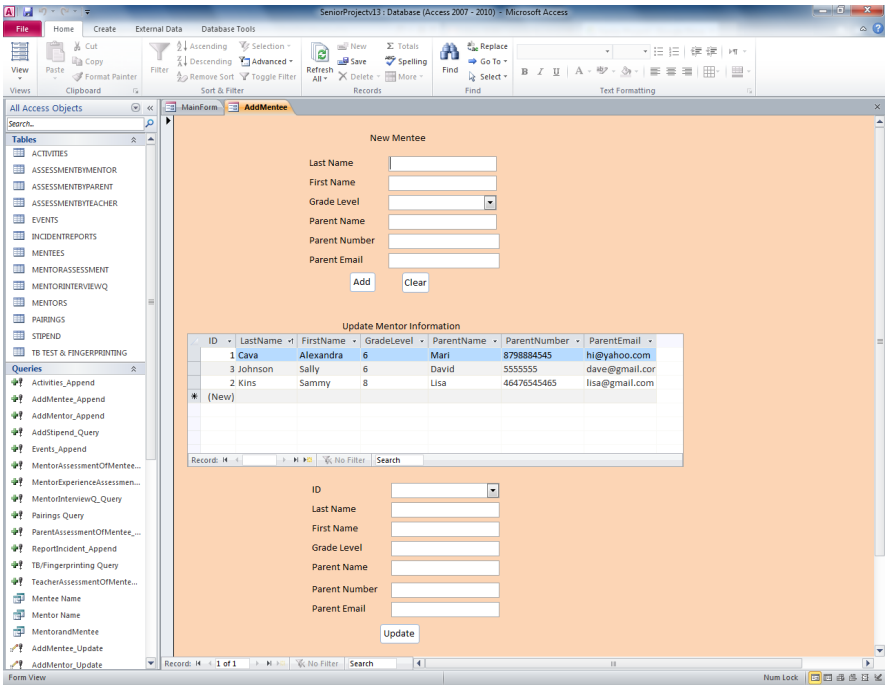

Figure 2: Add Mentee Form

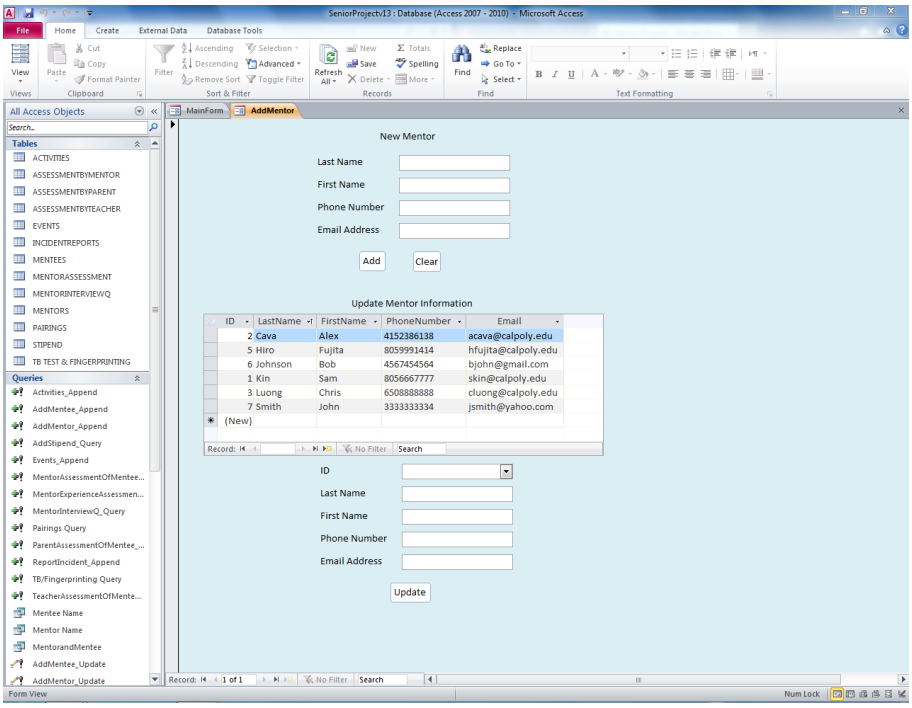

Figure 3: Add Mentor Form

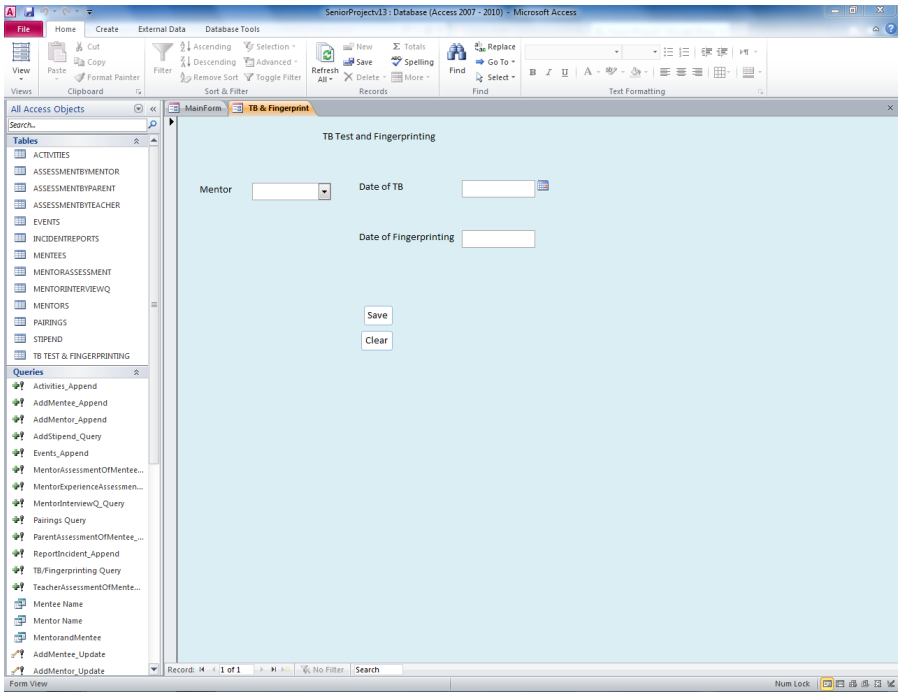

Figure 4: Mentor TB Test and Fingerprinting Dates Form

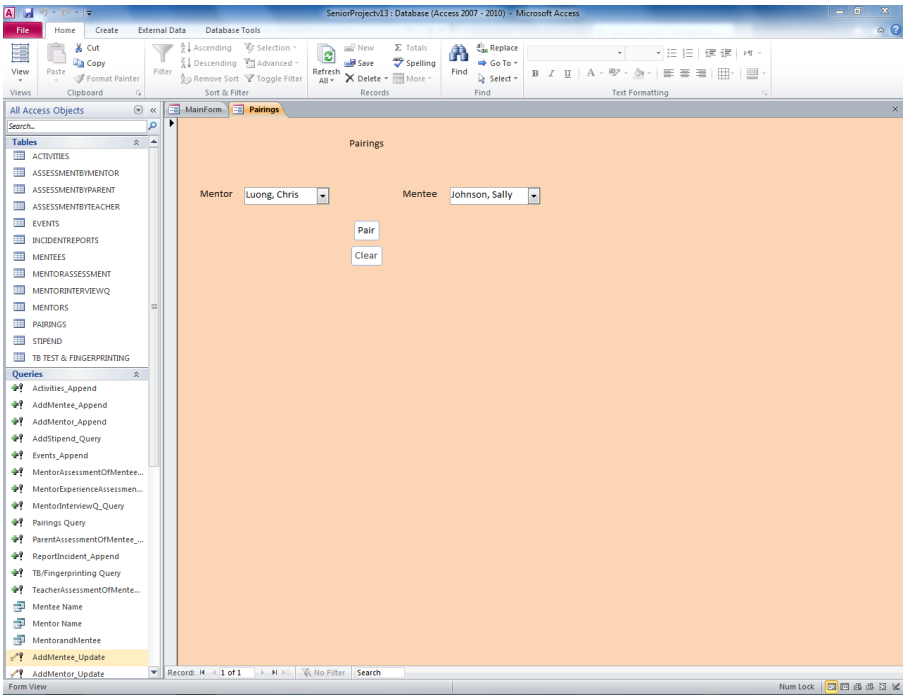

Figure 5: Pairing Form

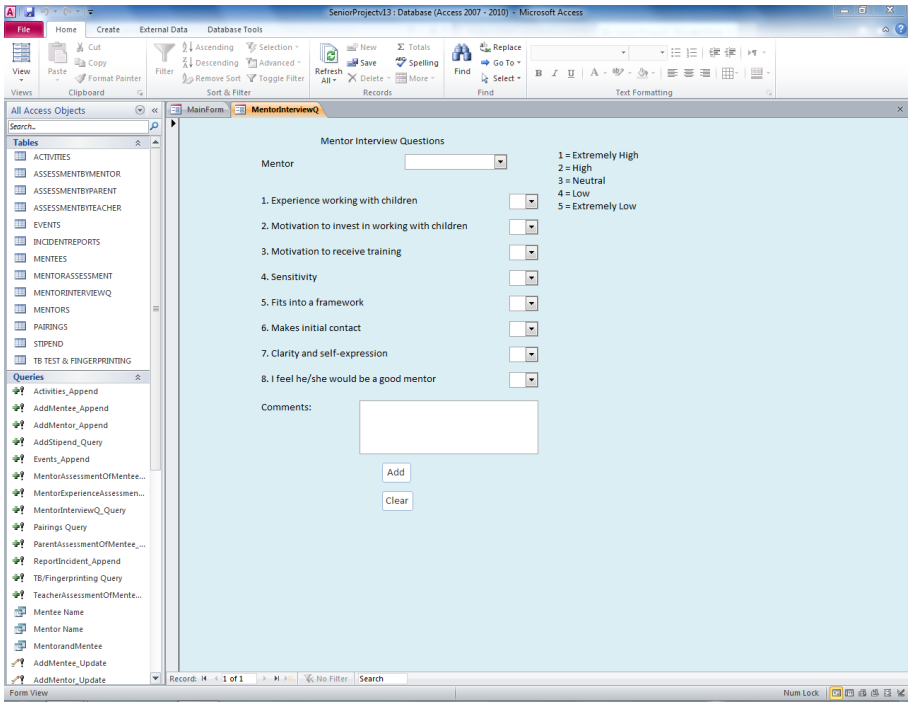

Figure 6: Mentor Interview Questions Form

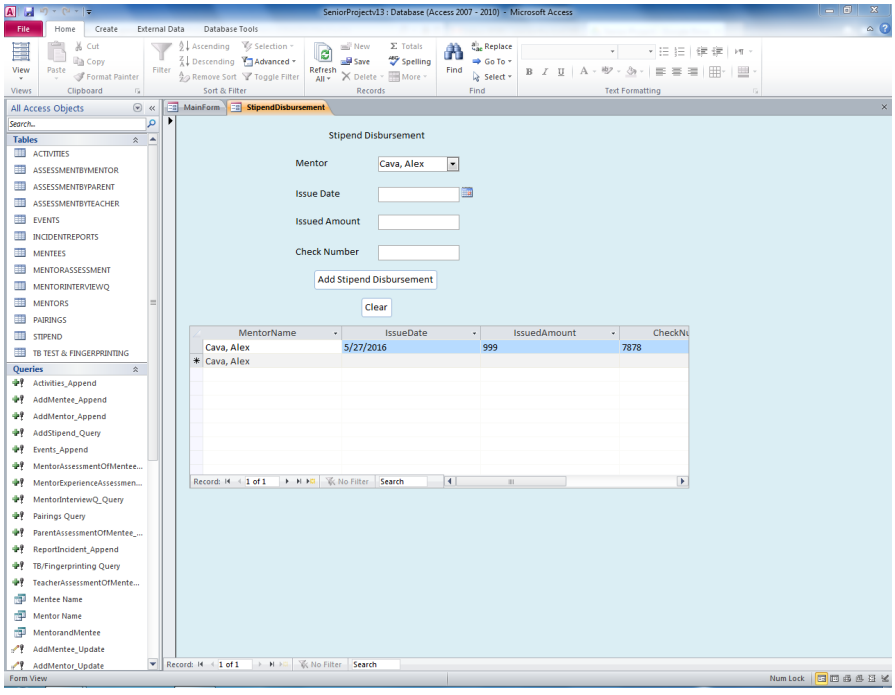

Figure 7: Stipend Disbursement Form

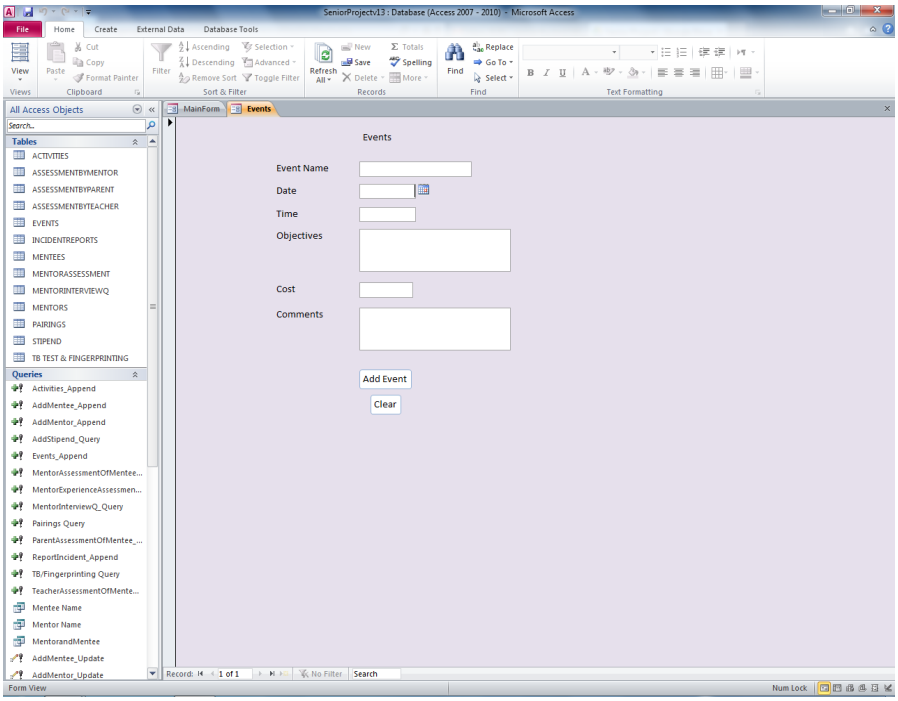

Figure 8: Events Form

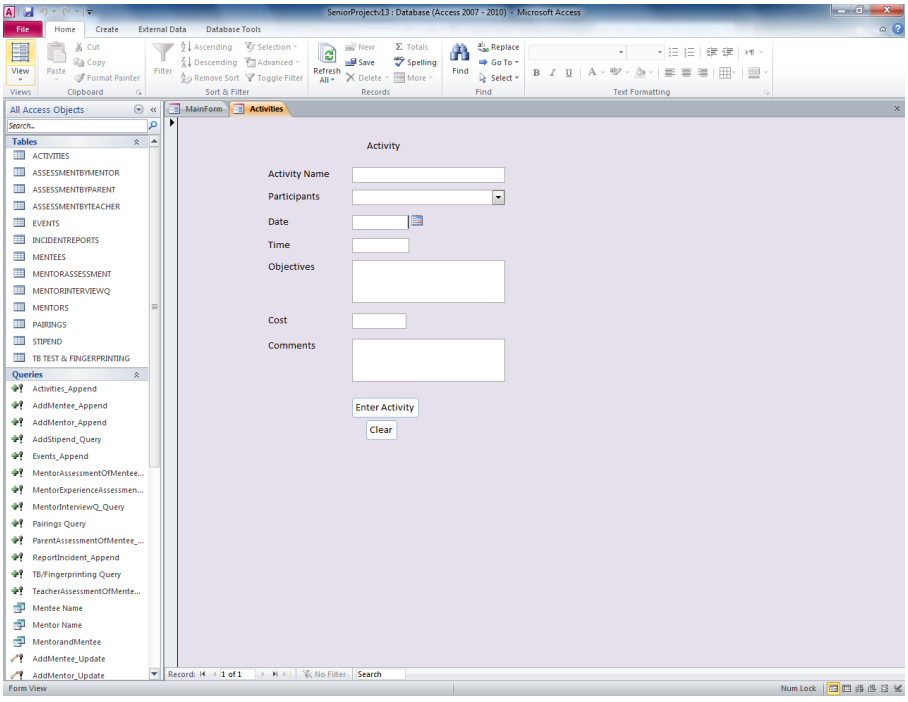

Figure 9: Activity Form

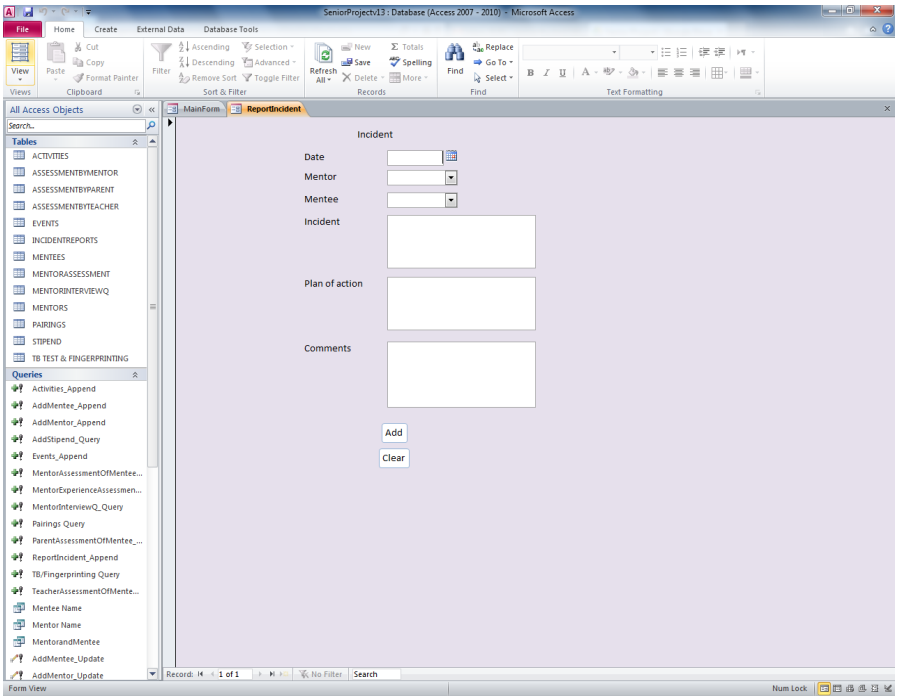

Figure 10: Incident Form

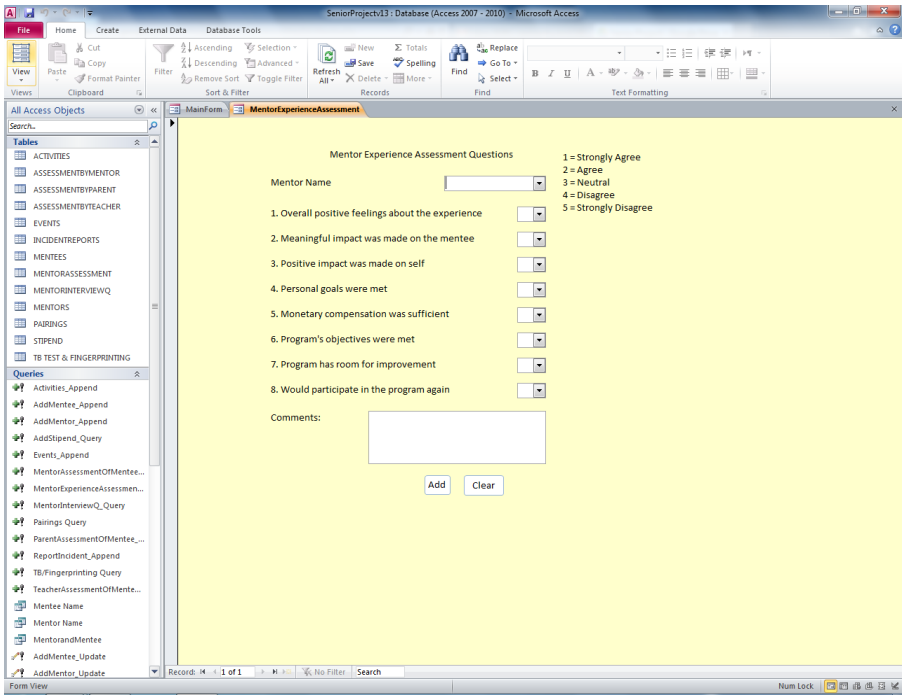

Figure 11: Mentor Experience Assessment Form

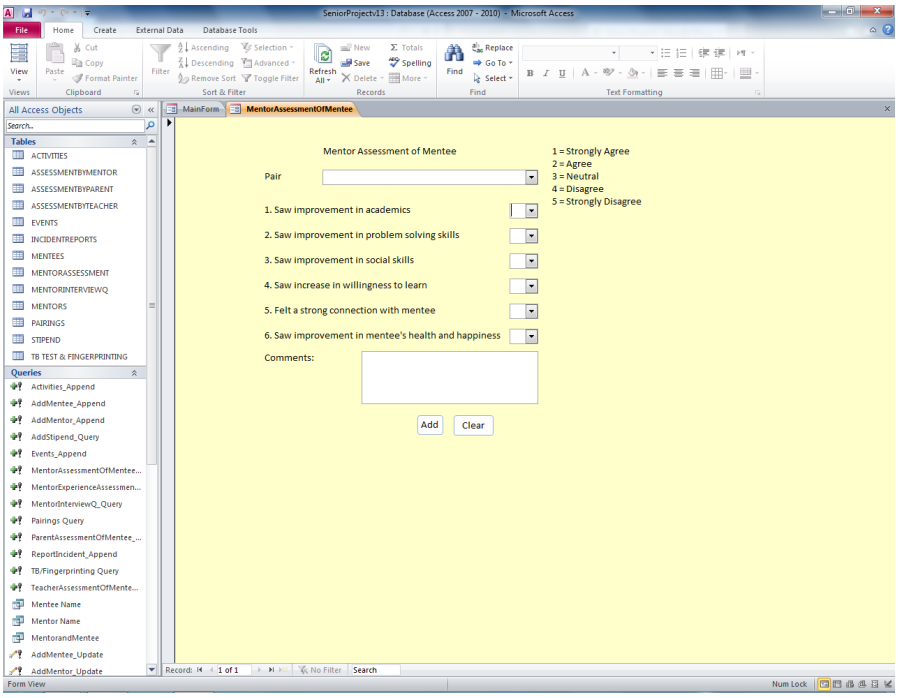

Figure 12: Mentor Assessment of Mentee Form

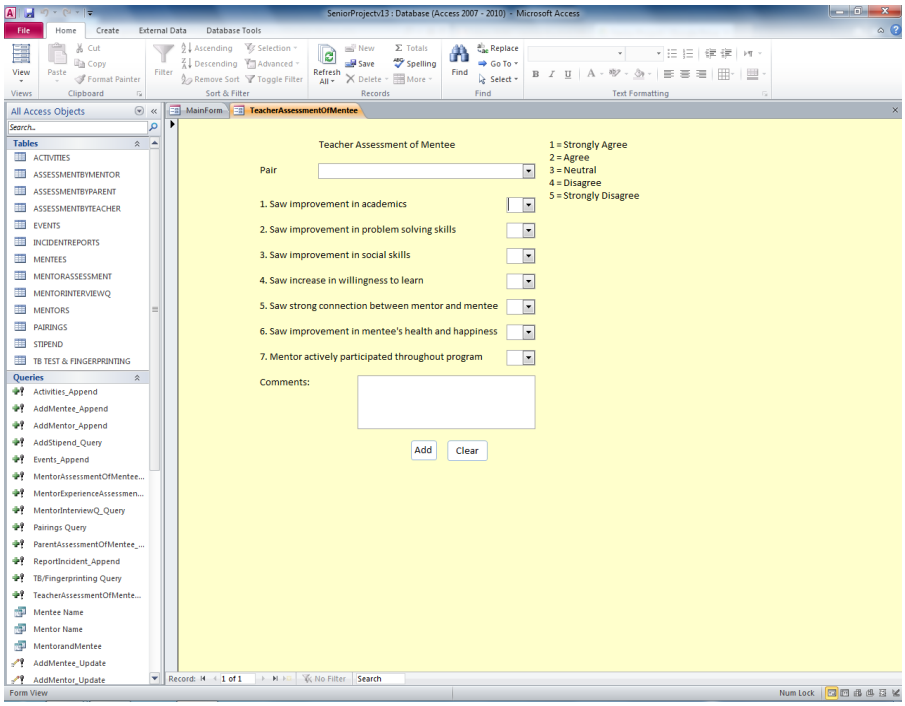

Figure 13: Teacher Assessment of Mentee Form

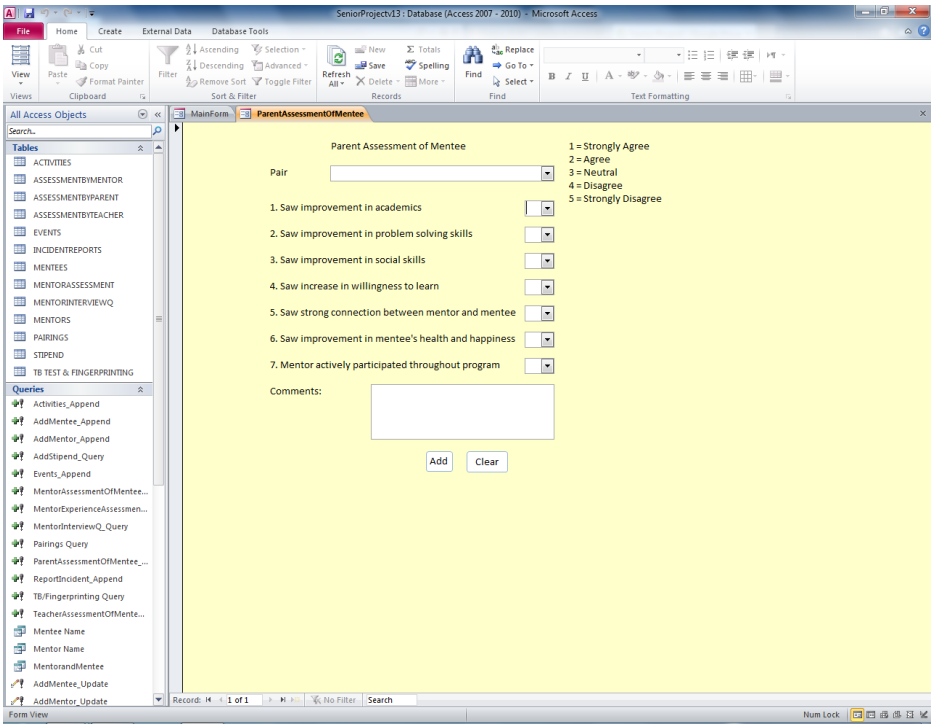

Figure 14: Parent Assessment of Mentee Form

For each of the individual forms, drop-down menus and date pickers were incorporated wherever possible to spare the user from having to type things in manually each time. In addition, the format, background, and font of each form was made to be aesthetically-pleasing to the user's eye to give the user additional ease in using the database.

Database Design

After establishing a solid understanding of the client's wants and requirements for the database, all of the tables, queries, and their corresponding relationships were strategically planned out with one another within Microsoft Access. Tables were quickly made to record basic mentor and mentee information, interview questions responses, TB test and fingerprinting dates, and a table that would hold all the pairings in the program. Tables were also made to record stipends, events, expenses, and incidents as each of these has a corresponding form to go along with it in the database. Figures 15 and 16 below are screenshots of the MENTORS

and STIPEND tables. The MENTORS table has 5 different fields: ID, LastName, FirstName, PhoneNumber, and Email, with the primary key being ID. The STIPEND table has 4 different fields: MentorName, IssueDate, IssuedAmount, and CheckNumber, with the primary key being CheckNumber. Each mentor is given an autonumber from ID, ensuring that each ID is only used once. CheckNumber is used as the primary key for the STIPEND table so that multiple stipends for a particular mentor can be added but the same check number can never be duplicated.

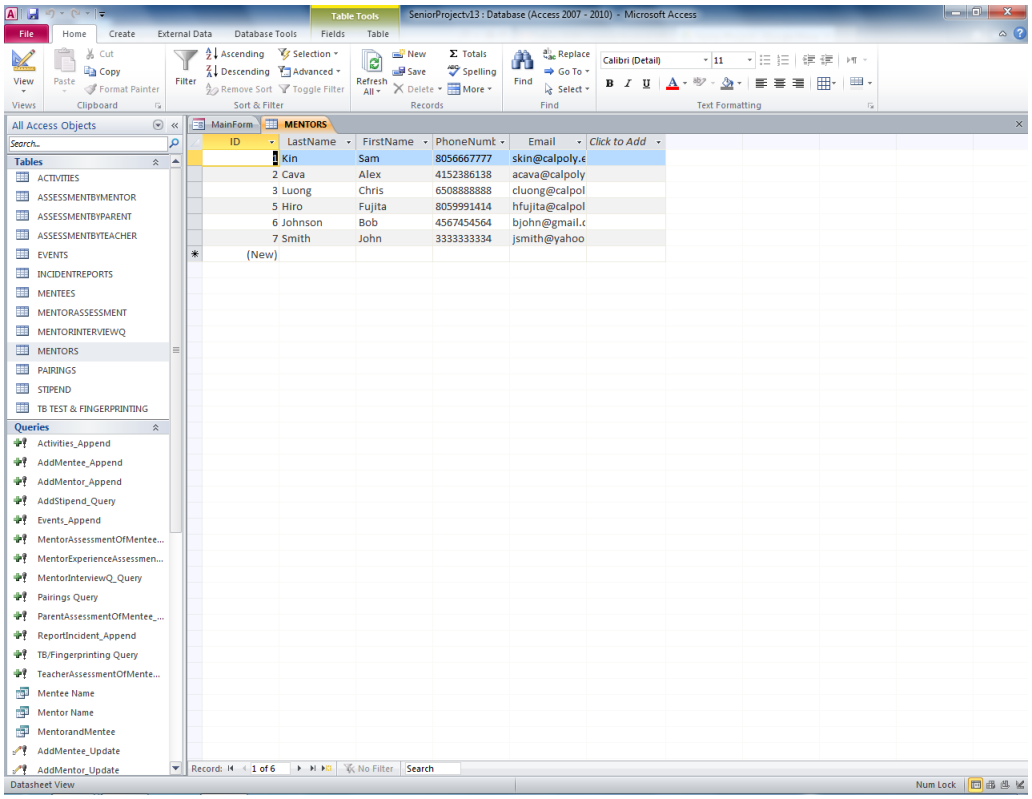

Figure 15: MENTORS Table

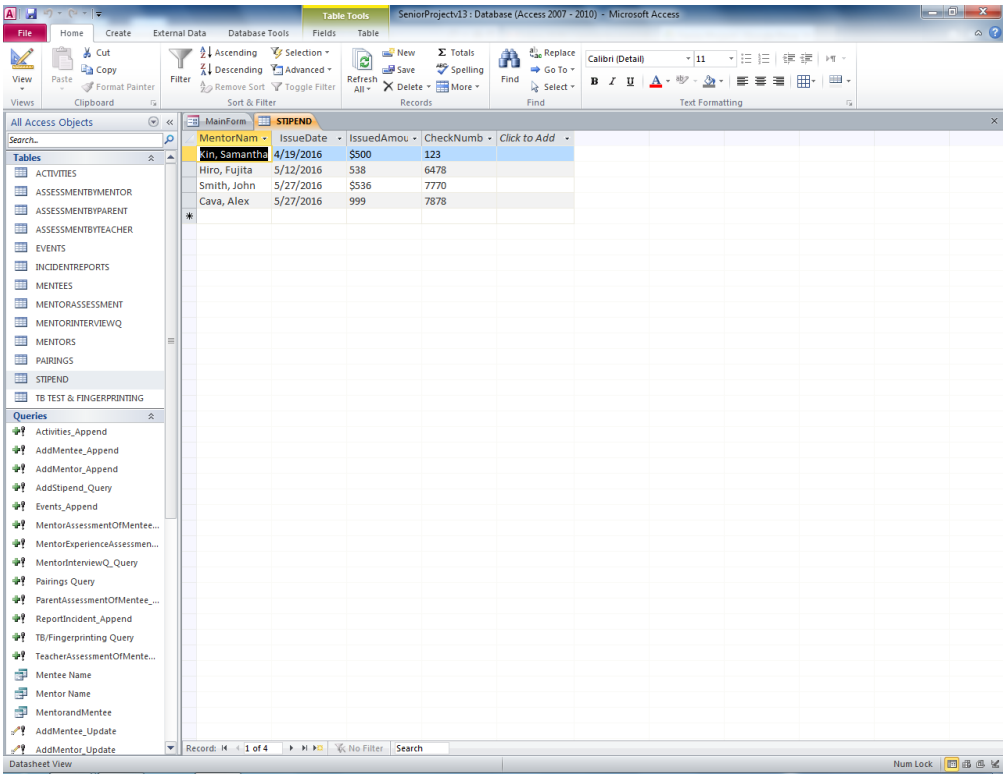

Figure 16: STIPEND Table

Queries were made to create concatenated expressions of first and last names of all the students so that their names could be found more easily in a drop-down menu within a form. Append and update queries were also made to help add new information and edit any pre existing information within the table so that the user does not have to enter the table and edit or delete the record manually. See Figure 17 and 18 below.

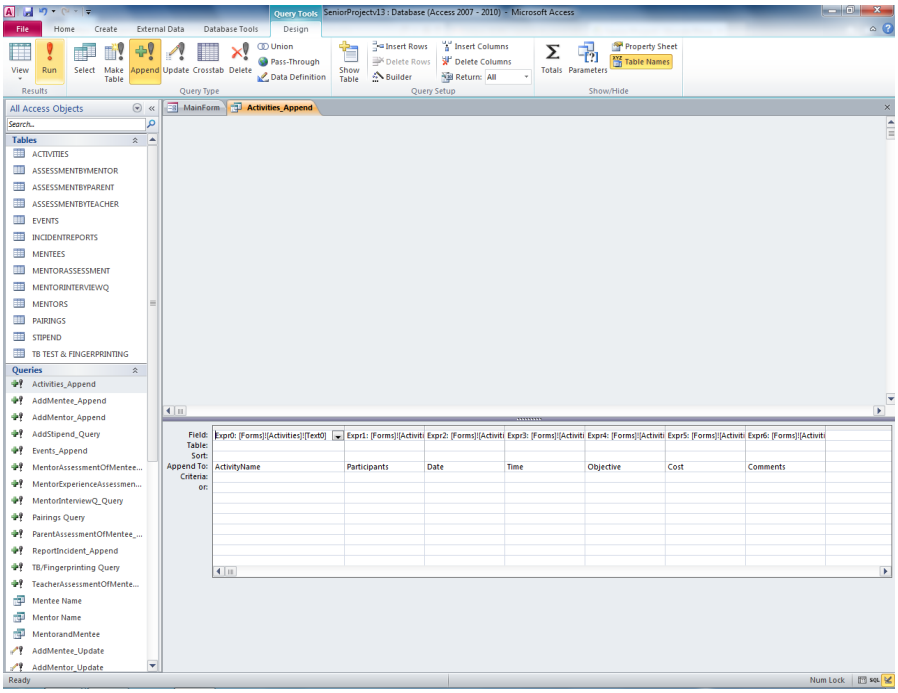

Figure 17: Activities Append Query

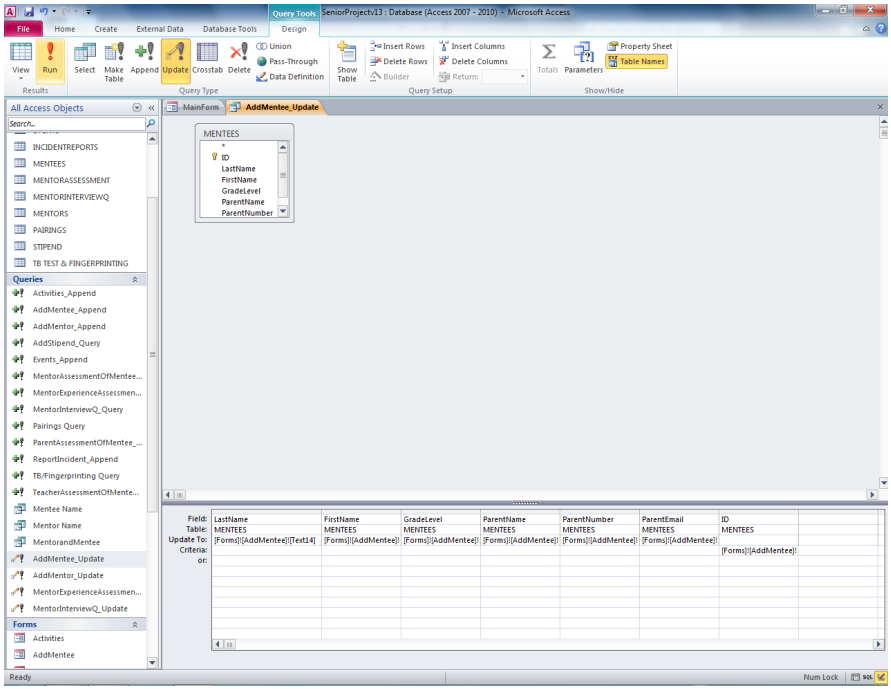

Figure 18: Add Mentee Update Query

IV. Methodology

The method to designing the database was based off of the client-provided documents, background, and information regarding the mentoring program. This mostly entailed following Perach's "Guide to the Perplexed" in order to describe the goals of the program and where the database fits in with accomplishing these goals. Design and details of what to include were up for more personal interpretation while consulting our client during the process.

Creating the database did not have a specific procedural method since databases are custom-designed for the client and purpose. Researching how to design a good user interface and thinking of the client's purpose for the database were the motivations for creating the database as it is. The database and contents were reviewed with the client at each milestone to ensure functionality and ease of use as well as to confirm all necessary mentoring program information can be stored.

An example of how the database was made user-friendly, practical, and functional is adding an edit feature for adding mentors and mentees. If there is an update in information or a misspelling, the user can easily select the entry from the subform, edit the information in the populated text boxes, and click update.

V. Results & Discussion

The results from the final design of the database were as expected, considering that the design was customized every step of the way with the client in mind. The methodology used to carry out the project allowed the design to be executed perfectly. The overall design of the database is fairly complex while still offering a simple and appealing interface; it allows the user to easily manage data and carry out any operations that may need to be done as a coordinator of a mentoring program.

The database created saves mentoring program coordinators a considerable amount of time. Instead of digging through emails and notes, all the necessary information can be easily input and recalled with the simple user interface. Given the benefits our software package has to offer, the level of simplicity, and the minimal upkeep, the Access-based mentoring management database created has an assessed value of $100 flat-rate cost plus a $10 monthly fee for customer assistance and other ongoing upkeep.

Any quality expectations discussed at the beginning of the project were easy to meet with the final design of the database as it was very clear what the client wanted. Anything not meeting her expectations or any faulty operations in the database would have been seen as poor quality, therefore, it was ensured that everything worked correctly. Productivity was also consistently on track as both deadlines set by the advisor and self-created deadlines were met as a team. The final design of the database adhered very closely to the original plans for the design, so nothing in that section would need to be changed quite yet in regards to the results.

Though some minor issues arose during the creation of the database, no unusual conditions were present as this was to be somewhat expected due to Microsoft Access's sensitive nature. In addition, no results were particularly difficult to interpret as the results are mainly subjective observations. An issue that continues to somewhat remain unanswered is the idea of multiple users for the database. More research would need to be conducted regarding the implementation of a different software or an additional program that could update the file consistently via the internet.

Though the program coordinator had no current way of recording all of the data she needed as the mentoring program had not yet begun, it is safe to assume that the database would save her a significant amount of time than if she were to use Microsoft Excel to manage all of the data. However, the use of the design should be somewhat limited until the database

has been used for a full cycle of the mentoring program. After those 18 weeks, some issues may arise where a query may not run correctly or a realization is made that some components to the mentoring program are missing. Upon the arrival of these issues, adjustments will need to be made accordingly and operations will need to be added or slightly modified.

VI. Conclusion

Before the start of this project, the client needed a way of efficiently managing information for her future mentoring program. For this reason, the overall objectives were to create a database that would allow its user to input and update all mentor and mentee information and monitor stipends, survey results, events, interview responses, expenses, and mentoring assessments. The primary methodology used in approaching a solution to this problem was trial and error; countless versions of a database were created to ensure that the final design would possess all the needs and desires of the client. As a result, the final design of the database incorporated:

- A simple and user-friendly interface to navigate between countless mentoring coordinator operations
- The ability to carry out all tasks that were addressed by the client with ease
- Fully functioning tables capable of holding all mentoring data

The project was very successful as each objective was achieved and the program coordinator was very pleased with the final design of the database. More importantly, she now has a way of accurately and efficiently monitoring all of the information for her mentoring program.

Overall, the project team learned that there is a lot of psychology behind the concept of youth mentoring and it was very important to understand those theories and information before

proceeding with the design of the database. In addition, it was reinforced that trial and error was a useful methodology to use in regards to reaching a solution to the problem using Microsoft Access. Next time, the team would like to further research a way to make the database accessible by multiple users from different computers while still accurately updating and maintaining all of the information. Based on the findings, the team would recommend that the database be updated after being in use for one full cycle of the mentoring program, as the coordinator may wish to add specific operations or change any form or table layouts.

REFERENCES

Buy Microsoft Access 2016 - Microsoft Store. *Microsoft Store*. N.p., n.d. Web. 01 June 2016.

Black, N. H., & Vernetti, B. J. (2015). Root-cause analysis: Creating & utilizing a functional database. *Professional Safety, 60*(2), 60-62. Web. 1 Mar. 2016.

DuBois, David L., and Michael J. Karcher. "Mentoring Children." *Handbook of Youth Mentoring*. Thousand Oaks, CA: Sage Publications, 2005. N. pag. Print.

Dubois, David L., Nelson Portillo, Jean E. Rhodes, Naida Silverthorn, and Jeffrey C. Valentine. "How Effective Are Mentoring Programs for Youth? A Systematic Assessment of the Evidence." Psychological Science in the Public Interest 12.2 (2011): 57-91. Web. 2 Feb. 2016.

Garringer, Michael, and Patti MacRae. Foundations of Successful Youth Mentoring. Portland: National Mentoring Center, 2008. Print.

MentorCore Program Management Software. *MENTOR*. N.p., n.d. Web. 01 June 2016.

Mentoring Software Pricing. *Innovative Mentoring Software*. N.p., n.d. Web. 01 June 2016.

Rehovot. *Perach's Guide to the Perplexed* N.p.: n.p., 2008. Print.

Situational Mentor. Abingdon, GB: Gower, 2012. ProQuest ebrary. Web. 2 February 2016.

"Six Ways to Measure Mentoring - TALENT MANAGEMENT." Talent Management. Human Capital Media, 08 Apr. 2013. Web. 14 May 2016.

Schneider, Joanne Kraenzle, Joseph F. Schneider, and Rebecca A. Lorenz. "Creating user-friendly databases with Microsoft Access." *Nurse Researcher* 13.1 (2005): 57+. *Academic OneFile*. Web. 1 Mar. 2016.

The Perach Tutorial Project. דף הבית. N.p., n.d. Web. 12 March 2016.

Trepanier-Street, Mary. "Mentoring young children: impact on college students." *Childhood Education* 84.1 (2007): 15+. *Academic OneFile*. Web. 1 Mar. 2016.

Ueno, Nachi, Ryota Hashimoto, Hisaharu Ishii, Hiroyuki Makino, and Yuzuru Kitayama. "Filter-based Access Control Model: Exploring A More Usable Database Management." Proceedings of the 4th Symposium on Computer Human Interaction for the Management of Information Technology - CHiMiT '10 (2010): n. pag. Web. 2 Feb. 2016.